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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FREDERICK PAUL BENNING,
JAMES A. HAGAN, STEVEN L. MAYNARD,
DAVID C. PAURUS, DOUGLAS H. PILTINGSRUD
AND JON EDWARD PODOLSKA

Appeal 2008-0889
Application 09/976,167
Technology Center 1700

Decided: February 14, 2008

Before EDWARD C. KIMLIN, CHARLES F. WARREN, and
PETER F. KRATZ, *Administrative Patent Judges*.

KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 41-50. Claims 41 and 45 are illustrative:

41. A self-cleaning colloidal slurry composition for superfinishing a surface of a substrate, the self-cleaning colloidal slurry composition comprising:

a carrying fluid;

colloidal particles;

etchant for etching the substrate;

a surfactant precipitated onto a surface of at least one of the substrate and the colloidal particles, the surfactant having a hydrophobic section that forms a steric hindrance barrier between the substrate and the colloidal particles,

wherein the substrate is selected from a group consisting of a glass disk substrate, a ceramic disk substrate, and a glass-ceramic disk substrate for use in a data storage device.

45. A self-cleaning colloidal slurry composition for superfinishing a surface of an aluminosilicate glass substrate for use in a data storage device, the self-cleaning colloidal slurry composition comprising:

a carrying fluid;

colloidal silica particles having a nominal size of approximately 2 – 200 nm;

etchant for etching the aluminosilicate glass substrate, wherein the etchant is a metal etchant selected from a group consisting of Ce^{+4} and Fe^{+3} ions, and combinations thereof, and wherein the metal etchant is present in solution and/or as a colloid and/or on the colloidal silica particles;

an ethylene oxide propylene oxide block copolymer surfactant adsorbed onto a surface of at least one of the aluminosilicate glass substrate and the colloidal silica particles, the ethylene oxide propylene oxide block copolymer surfactant having a hydrophobic section that forms a steric

hindrance barrier between the aluminosilicate glass substrate and the colloidal silica particles;

and wherein the self-cleaning colloidal slurry composition has a pH of approximately 0 to 4.

The Examiner relies upon the following references as evidence of obviousness:

Roberts	5,723,181	Mar. 3, 1998
Burton	6,083,838	Jul. 4, 2000
Hartog	6,236,542 B1	May 22, 2001
Kuroda	6,268,979 B1	Jul. 31, 2001

Appellants' claimed invention is directed to a colloidal slurry composition that finds use in superfinishing a surface of a substrate, such as an aluminosilicate glass substrate that is used in a data storage device. The composition comprises a carrying fluid, colloidal particles such as silica, an etchant for the substrate and a surfactant that is precipitated upon the colloidal particles.¹ The surfactant has a hydrophobic section that forms a steric hindrance barrier between the substrate and the colloidal particles.

The appealed claims stand rejected under 35 U.S.C. § 103(a) as follows:

- (a) claims 41-44 over Hartog in view of Roberts,
- (b) claims 45-50 over Hartog in view of Kuroda and Burton.

¹ Although the claims read that the surfactant may be precipitated on a surface of the substrate, we interpret this as a statement of intended use since the substrate is not part of the composition.

We have thoroughly reviewed the respective positions advanced by Appellants and the Examiner in reaching our decision.

We consider first the rejection of claims 41-44 over Hartog in view of Roberts. Hartog, like Appellants, discloses a composition for polishing a disk substrate comprising a carrying fluid, silica colloidal particles and an etchant for the substrate. The slurry composition of Hartog also comprises a stabilizer that is contemplated by Appellants. However, Hartog provides no teaching of a surfactant, in general, let alone the specific surfactants recited in claims 42, 45, and 50, and a surfactant precipitated on the colloidal particles as set forth in claim 41.

The Examiner relies upon Roberts for teaching that "surfactant such as sodium octyl sulfate is used in a colloidal silica composition for changing the surface chemistry" (Ans. 4, first para.). However, as stressed by Appellants, Roberts is not directed to polishing compositions of the type disclosed by Hartog and presently claimed. Rather, Roberts is concerned with compositions that render hydrophobic surfaces hydrophilic, such as synthetic fibers like polyethylene terephthalate, hydrophobic synthetic films such as polyester and polyolefin films, and hydrophobic wax surfaces in investment casting (*see* col. 1, ll. 39-46). Accordingly, we must agree with Appellants that there would have been no reason for one of ordinary skill in the art to modify the polishing composition of Hartog by adding a component of the hydrophilizing compositions of Roberts. The Examiner offers the faulty explanation that the surfactant of Roberts, having the hydrophobic section, would act exactly the same way as in the instant

invention if added to the composition of Hartog. However, we agree with Appellants that one of ordinary skill in the art would have gleaned no suggestion from Roberts for adding a surfactant to the polishing composition of Hartog.

The rejection of claims 45-50 over Hartog in view of Kuroda and Burton is another matter. We agree with the Examiner that Burton would have given ample suggestion to one of ordinary skill in the art to include a surfactant, like Appellants' ethylene oxide propylene oxide block copolymer, in the composition of Hartog for the purpose reducing the rate of oxidation of the metal substrate. Hartog expressly discloses that the substrate material may be titanium (col. 4, l. 23), and Burton teaches that the ethoxylate inhibits oxidation of the treated metal substrate, such as titanium (*see* col. 3, l. 34). It is of no moment that Appellants' claims recite an intended use for treating a non-metallic aluminosilicate glass substrate. The claims define a composition and not a method of using the composition for treating such glass substrates. We perceive no patentable distinction between the finishing composition of Hartog, once modified with the surfactant of Burton, and compositions encompassed by the appealed claims.

Appellants maintain that Hartog does not disclose or suggest using its superpolishing process and slurry on disk substrates that have been coated with a magnetic material (*see* Reply Br. 4, second para.). Hartog clearly teaches that a substrate of nickel phosphorus (NiP) can be used as well as "[o]ther substrate materials such as glass, titanium, carbon, zirconium, silicon carbide and NiP coated Beryllium" (col. 4, ll. 23-24). Furthermore,

Hartog explicitly states that "[t]he present invention is equally applicable to magnetic disks made entirely of magnetic material" (col. 4, ll. 29-31, emphasis added).

As for the claimed range for the nominal size of the colloidal silica particles, the Examiner has taken the proper position that the broader range for particle size disclosed by Hartog totally embraces the claimed range, thereby rendering it prima facie obvious (*see* Hartog at col. 6, second para.). Appellants have proffered no objective evidence which establishes that the claimed particle size range produces unexpected results.

This application is remanded to the Examiner to consider a rejection of claims 41-44 under 35 U.S.C. § 103(a) over the collective teachings of Hartog, Kuroda, and Burton, as well as any other prior art that the Examiner deems appropriate. The Examiner should consider the obviousness of the claimed subject matter in view of our analysis above with respect to the combined teachings of Hartog and Burton. We must emphasize that claim 41 defines a composition and not a method of using the composition on one of the recited substrates. The recited substrate in no way defines the components of the colloidal slurry composition embraced by claim 41.

In conclusion, based on the foregoing, the Examiner's rejection of claims 41-44 is reversed whereas the rejection of claims 45-50 is affirmed. The application is remanded to the Examiner for the reasons set forth above. Accordingly, the Examiner's decision rejecting the appealed claims in affirmed-in-part.

This remand to the Examiner is made pursuant to 37 C.F.R. § 41.50(a)(1) (effective September 13, 2004, 69 Fed. Reg. 49960 (August 12, 2004), 1286 Off. Gaz. Pat. Office 21 (September 7, 2004)).

In view of the above Remand to the Examiner for further prosecution of this application, this decision is not final for purposes of judicial review. 37 C.F.R. § 41.50(e)(2007).

AFFIRMED-IN-PART and REMANDED

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